Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1   1.   (currently amended): A system for collection and analysis of

2   regularly retrieved patient information for automated remote patient care,

3   comprising:

4   a medical device having a sensor for <u>autonomously</u> monitoring at least one

5   physiological measure of an individual patient and regularly recording ~~and storing~~

6   measures sets ~~comprising individual measures which~~ <u>that</u> each ~~relate to~~ <u>comprise</u>

7   patient information; <u>and</u>

8   a ~~database~~ <u>server</u>, comprising:

9   a database <u>module periodically</u> collecting one or more patient care

10   records, comprising organizing one or more patient care records which each

11   comprise a plurality of the collected <u>the</u> measures sets and storing the collected

12   measures set <u>on a substantially regular basis from the medical device</u> into a

13   patient care record for the individual patient <u>in a database</u>; and

14   ~~a server periodically receiving a set of the collected measures~~

15   ~~retrieved on a substantially regular basis from the medical device, and~~ <u>an analysis</u>

16   <u>module</u> analyzing one or more of the collected measures sets in the patient care

17   record for the individual patient relative to one or more other collected measures

18   sets stored in the database to determine a patient status indicator of patient

19   wellness to <u>automatically</u> recognize a trend indicating disease onset, progression,

20   regression, and status quo in patient well being and to <u>automatically</u> determine

21   whether medical intervention is necessary.

1   2.   (original): A system according to Claim 1, further comprising:

2   the server receiving a set of quality of life measures recorded by the

3   individual patient, and determining a change in patient status by comparing at

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4 least one recorded quality of life measure to at least one other corresponding

5 recorded quality of life measure; and

6   the database storing the collected quality of life measures set into the

7 patient care record for the individual patient within the database.

1   3.   (original): A system according to Claim 1, further comprising:

2   the server repeatedly receiving one or more collected measures sets which

3 are each recorded by a sensor which monitors at least one physiological measure

4 of the individual patient, each such sensor monitoring a site within the individual

5 patient unique from the site monitored by any other such sensor, and analyzing

6 one or more of the site specific collected measures sets in the patient care record

7 for each site within the individual patient relative to one or more other site

8 specific collected measures sets stored in the database to determine a patient

9 status indicator; and

10   the database storing each collected measures set organized by specific site

11 into the patient care record for the individual patient within the database.

1   4.   (original): A system according to Claim 3, wherein the one or more

2 site specific collected measures sets and the one or more other site specific

3 collected measures sets both store measures collected from the same relative site.

1   5.   (original): A system according to Claim 3, wherein the one or more

2 site specific collected measures sets and the one or more other site specific

3 collected measures sets both store measures collected from a different site.

1   6.   (original): A system according to Claim 3, the server further

2 comprising:

3   a comparison module comparing an initial measure selected from the one

4 or more site specific collected measures sets to a sibling measure selected from

5 the one or more other site specific collected measures sets, the initial measure and

6 the sibling measure both relating to the same type of patient information.

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1   7.   (original): A system according to Claim 3, the server further

2   comprising:

3   a derivation module determining an initial derived measure using at least

4   one measure selected from the one or more site specific collected measures sets

5   and determining a sibling derived measure using at least one measure selected

6   from the one or more other site specific collected measures sets, the initial derived

7   measure and the sibling derived measure both relating to the same type of derived

8   patient information; and

9   a comparison module comparing the initial derived measure to the sibling

10 derived measure.

1   8.   (original): A system according to Claim 3, the server further

2   comprising:

3   a comparison module comparing an initial measure selected from the one

4   or more site specific collected measures sets to a peer measure selected from the

5   one or more other site specific collected measures sets, the initial measure relating

6   to a different type of patient information than the peer measure.

1   9.   (original): A system according to Claim 3, the server further

2   comprising:

3   a derivation module determining a peer derived measure using at least one

4   measure selected from the one or more other site specific collected measures sets;

5   and

6   a comparison module comparing an initial measure selected from the one

7   or more site specific collected measures sets to the peer derived measure, the

8   initial measure relating to a different type of patient information than the derived

9   patient information to which the peer derived measure relates.

1   10.   (original): A system according to Claim 3, the server further

2   comprising:

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3   a derivation module determining an initial derived measure using at least

4   one measure selected from the one or more site specific collected measures sets;

5   and

6   a comparison module comparing the initial derived measure to a peer

7   measure selected from the one or more other site specific collected measures sets,

8   the initial derived measure relating to a different type of derived patient

9   information than the patient information to which the peer measure relates.

1   11.   (original): A system according to Claim 3, the server further

2   comprising:

3   a derivation module determining an initial derived measure using at least

4   one measure selected from the one or more site specific collected measures sets

5   and determining a peer derived measure using at least one measure selected from

6   the one or more other site specific collected measures sets; and

7   a comparison module comparing the initial derived measure to the peer

8   derived measure, the initial derived measure relating to a different type of derived

9   patient information than the derived patient information to which the peer derived

10 measure relates.

1   12.   (currently amended): An system according to Claim 1, further

2   comprising:

3   the database further storing a reference baseline comprising recorded

4   measures which each relate to patient information recorded during an initial time

5   period and comprise either medical device measures or derived measures

6   calculable therefrom; and

7   a wherein the database module obtaining obtains at least one of the at least

8   one recorded measure and the at least one other recorded measure from the

9   retrieved reference baseline.

1   13.   (original): A system according to Claim 1, wherein the one or more

2   other site specific collected measures sets are stored in the patient care record for

3   the individual patient for whom the patient care indicator has been determined.

1   14.   (original): A system according to Claim 1, wherein the one or more

2   other site specific collected measures sets are stored in the patient care records for

3   a group of one or more other individual patients.

1   15.   (original): A system according to Claim 1, further comprising:

2   a collection client communicatively interposed between the medical

3   device and network server, the collection client retrieving the collected measures

4   set and downloading the collected measures set from the collection client into the

5   server.

1   16.   (original): A system according to Claim 15, wherein the collection

2   client is selected from the group consisting of a programmer, interrogator,

3   recorder, monitor, telemetered signals transceiver, personal computer, digital data

4   processor, and combinations thereof.

1   17.   (previously presented): A system according to Claim 1, the server

2   further comprising:

3   a feedback module providing tiered feedback comprising:

4   at a first level of feedback, communicating an interpretation of the

5   patient status indicator to the individual patient;

6   at a second level of feedback, communicating a notification of

7   potential medical concern based on the patient status indicator to the individual

8   patient;

9   at a third level of feedback, communicating a notification of

10   potential medical concern based on the patient status indicator to medical

11   personnel in local proximity to the individual patient; and

12   at a fourth level of feedback, communicating a set of

13   reprogramming instructions based on the patient status indicator to the medical

14   device.

1   18.   (original): A system according to Claim 17, wherein the automated

2   feedback comprises at least one of the group consisting of a peer group status

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3   indicator, a historical status indicator, a trend indicator, a medicinal efficacy

4   indicator, and a wellness indicator.

1   19.   (original): A system according to Claim 17, wherein the feedback

2   module communicates over a communications link which comprises at least one

3   of the following: internetwork link, intranetwork link, serial link, data telephone

4   link, satellite link, radio-frequency link, infrared link, fiber optic link, coaxial

5   cable link, television link, and combinations thereof.

1   20.   (original): A system according to Claim 17, wherein the feedback

2   client is selected from the group consisting of a personal computer, facsimile

3   machine, telephone instrument, network computer, wireless computer, personal

4   data assistant, television, digital data processor, and combinations thereof.

1   21.   (currently amended): A system according to Claim 1, ~~the server~~

2   ~~further comprising:~~

3   ~~an~~ wherein the analysis module dynamically ~~analyzing~~ analyzes the one or

4   more of the collected measures sets in the patient care record for the individual

5   patient.

1   22.   (currently amended): A system according to Claim 1, ~~the server~~

2   ~~further comprising:~~

3   ~~an~~ wherein the analysis module ~~analyzing~~ analyzes the one or more of the

4   collected measures sets in the patient care record for the individual patient in a

5   batch comprising the one or more of the collected measures sets in patient care

6   records for a plurality of individual patients.

1   23.   (original): A system according to Claim 1, wherein the medical

2   device communicates over a communications link which comprises at least one of

3   the following: internetwork link, intranetwork link, serial link, data telephone

4   link, satellite link, radio-frequency link, infrared link, fiber optic link, coaxial

5   cable link, television link, and combinations thereof.

1   24.   (original): A system according to Claim 1, wherein the database

2   comprises at least one of the following: volatile storage, non-volatile storage,

3   removable storage, fixed storage, random access storage, sequential access

4   storage, permanent storage, erasable storage, and combinations thereof.

1   25.   (original): A system according to Claim 24, wherein the

2   organization of the database comprises at least one of the following: flat file,

3   hierarchical database, relational database, distributed database, and combinations

4   thereof.

1   26.   (original): A system according to Claim 1, wherein the medical

2   device is selected from the group consisting of a pacemaker, cardioverter

3   defibrillator, heart failure monitor, event monitor, cardiopulmonary monitor,

4   metabolic monitor or device, endocrinology monitor or device, hematological

5   monitor or device, neuromuscular monitor or device, gastrointestinal monitor or

6   device, genitourinary monitor or device, and combinations thereof.

1   27.   (original): A system according to Claim 1, wherein the set of

2   collected measures comprises at least one of the following: atrial electrical

3   activity, ventricular electrical activity, time of day, activity level, cardiac output,

4   oxygen level, cardiovascular pressure measures, pulmonary measures,

5   interventions made, and combinations thereof.

1   28.   (original): A system according to Claim 27, the set of collected

2   measures further comprising derived measures selected from the group consisting

3   of linear measures derived from the set of collected measures, non-linear

4   measures derived from the set of collected measures, and combinations thereof.

1   29.   (currently amended): A method for collection and analysis of

2   regularly retrieved patient information for automated remote patient care,

3   comprising:

4   providing a medical device having a sensor for autonomously monitoring

5 at least one physiological measure of an individual patient;

6   regularly recording ~~and storing~~ measures sets ~~comprising individual~~

7 ~~measures which~~ that each ~~relate to~~ comprise patient information ~~by a~~ with the

8 medical device ~~having a sensor for monitoring at least one physiological measure~~

9 ~~of an individual patient~~;

10   periodically ~~receiving a set of~~ collecting the ~~collected~~ measures ~~retrieved~~

11 sets on a substantially regular basis from the medical device~~;~~

12   ~~collecting one or more patient care records into a database, comprising:~~

13   ~~organizing one or more patient care records which each comprise a~~

14 ~~plurality of the collected measures sets;~~

15   ~~storing the collected measures set~~ into a patient care record for the

16 individual patient in a database; and

17   analyzing one or more of the collected measures sets in the patient care

18 record for the individual patient relative to one or more other collected measures

19 sets stored in the database to determine a patient status indicator of patient

20 wellness to automatically recognize a trend indicating disease onset, progression,

21 regression, and status quo in patient well being and to automatically determine

22 whether medical intervention is necessary.

1   30.   (original): A method according to Claim 29, further comprising:

2   receiving a set of quality of life measures recorded by the individual

3 patient;

4   storing the collected quality of life measures set into the patient care

5 record for the individual patient within the database; and

6   determining a change in patient status by comparing at least one recorded

7 quality of life measure to at least one other corresponding recorded quality of life

8 measure.

1   31.   (original): A method according to Claim 29, further comprising:

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2   repeatedly receiving one or more collected measures sets which are each

3   recorded by a sensor which monitors at least one physiological measure of the

4   individual patient, each such sensor monitoring a site within the individual patient

5   unique from the site monitored by any other such sensor;

6   storing each collected measures set organized by specific site into the

7   patient care record for the individual patient within the database; and

8   analyzing one or more of the site specific collected measures sets in the

9   patient care record for each site within the individual patient relative to one or

10   more other site specific collected measures sets stored in the database to

11   determine a patient status indicator.

1   32.   (original): A method according to Claim 31, wherein the one or

2   more site specific collected measures sets and the one or more other site specific

3   collected measures sets both store measures collected from the same relative site.

1   33.   (original): A method according to Claim 31, wherein the one or

2   more site specific collected measures sets and the one or more other site specific

3   collected measures sets both store measures collected from a different site.

1   34.   (original): A method according to Claim 31, the operation of

2   analyzing the one or more site specific collected measures sets further

3   comprising:

4   comparing an initial measure selected from the one or more site specific

5   collected measures sets to a sibling measure selected from the one or more other

6   site specific collected measures sets, the initial measure and the sibling measure

7   both relating to the same type of patient information.

1   35.   (original): A method according to Claim 31, the operation of

2   analyzing the one or more site specific collected measures sets further

3   comprising:

4   determining an initial derived measure using at least one measure selected

5   from the one or more site specific collected measures sets;

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6   determining a sibling derived measure using at least one measure selected

7   from the one or more other site specific collected measures sets, the initial derived

8   measure and the sibling derived measure both relating to the same type of derived

9   patient information; and

10   comparing the initial derived measure to the sibling derived measure.

1   36.   (original): A method according to Claim 31, the operation of

2   analyzing the one or more site specific collected measures sets further

3   comprising:

4   comparing an initial measure selected from the one or more site specific

5   collected measures sets to a peer measure selected from the one or more other site

6   specific collected measures sets, the initial measure relating to a different type of

7   patient information than the peer measure.

1   37.   (original): A method according to Claim 31, the operation of

2   analyzing the one or more site specific collected measures sets further

3   comprising:

4   determining a peer derived measure using at least one measure selected

5   from the one or more other site specific collected measures sets; and

6   comparing an initial measure selected from the one or more site specific

7   collected measures sets to the peer derived measure, the initial measure relating to

8   a different type of patient information than the derived patient information to

9   which the peer derived measure relates.

1   38.   (original): A method according to Claim 31, the operation of

2   analyzing the one or more site specific collected measures sets further

3   comprising:

4   determining an initial derived measure using at least one measure selected

5   from the one or more site specific collected measures sets; and

6   comparing the initial derived measure to a peer measure selected from the

7   one or more other site specific collected measures sets, the initial derived measure

8   relating to a different type of derived patient information than the patient

9   information to which the peer measure relates.

1   39.   (original): A method according to Claim 31, the operation of

2   analyzing the one or more site specific collected measures sets further

3   comprising:

4   determining an initial derived measure using at least one measure selected

5   from the one or more site specific collected measures sets;

6   determining a peer derived measure using at least one measure selected

7   from the one or more other site specific collected measures sets; and

8   comparing the initial derived measure to the peer derived measure, the

9   initial derived measure relating to a different type of derived patient information

10   than the derived patient information to which the peer derived measure relates.

1   40.   (original): A method according to Claim 39, further comprising:

2   retrieving a reference baseline comprising recorded measures which each

3   relate to patient information recorded during an initial time period and comprise

4   either medical device measures or derived measures calculable therefrom; and

5   obtaining at least one of the at least one recorded measure and the at least

6   one other recorded measure from the retrieved reference baseline.

1   41.   (original): A method according to Claim 39, wherein the one or

2   more other site specific collected measures sets are stored in the patient care

3   record for the individual patient for whom the patient care indicator has been

4   determined.

1   42.   (original): A method according to Claim 39, wherein the one or

2   more other site specific collected measures sets are stored in the patient care

3   records for a group of one or more other individual patients.

1   43.   (original): A method according to Claim 39, further comprising:

2   providing tiered feedback comprising:

3   at a first level of feedback, communicating an interpretation of the

4 patient status indicator to the individual patient;

5   at a second level of feedback, communicating a notification of

6 potential medical concern based on the patient status indicator to the individual

7 patient;

8   at a third level of feedback, communicating a notification of

9 potential medical concern based on the patient status indicator to medical

10 personnel in local proximity to the individual patient; and

11   at a fourth level of feedback, communicating a set of

12 reprogramming instructions based on the patient status indicator to the medical

13 device.

1   44. (currently amended): A computer-readable storage medium

2 holding code for collection and analysis of regularly retrieved patient information

3 for automated remote patient care, comprising:

4   code for a medical device having a sensor for autonomously monitoring at

5 least one physiological measure of an individual patient;

6   code for regularly recording ~~and storing~~ measures sets ~~comprising~~

7 ~~individual measures which~~ that each ~~relate to~~ comprise patient information ~~by a~~

8 with the medical device ~~having a sensor for monitoring at least one physiological~~

9 ~~measure of an individual patient~~;

10   code for periodically ~~receiving a set of~~ collecting the ~~collected~~ measures

11 ~~retrieved~~ sets on a substantially regular basis from the medical device~~;~~

12   ~~code for collecting one or more patient care records into a database,~~

13 ~~comprising:~~

14   ~~code for organizing one or more patient care records which each~~

15 ~~comprise a plurality of the collected measures sets;~~

16   ~~code for storing the collected measures set~~ into a patient care

17 record for the individual patient in a database; and

18   code for analyzing one or more of the collected measures sets in the

19 patient care record for the individual patient relative to one or more other

20 collected measures sets stored in the database to determine a patient status

21 indicator of patient wellness to <u>automatically</u> recognize a trend indicating disease

22 onset, progression, regression, and status quo in patient well being and to

23 <u>automatically</u> determine whether medical intervention is necessary.

1   45.   (original): A storage medium according to Claim 44, further

2 comprising:

3   code for receiving a set of quality of life measures recorded by the

4 individual patient;

5   code for storing the collected quality of life measures set into the patient

6 care record for the individual patient within the database; and

7   code for determining a change in patient status by comparing at least one

8 recorded quality of life measure to at least one other corresponding recorded

9 quality of life measure.

1   46.   (original): A storage medium according to Claim 44, further

2 comprising:

3   code for repeatedly receiving one or more collected measures sets which

4 are each recorded by a sensor which monitors at least one physiological measure

5 of the individual patient, each such sensor monitoring a site within the individual

6 patient unique from the site monitored by any other such sensor;

7   code for storing each collected measures set organized by specific site into

8 the patient care record for the individual patient within the database; and

9   code for analyzing one or more of the site specific collected measures sets

10 in the patient care record for each site within the individual patient relative to one

11 or more other site specific collected measures sets stored in the database to

12 determine a patient status indicator.

1   47.   (original): A storage medium according to Claim 46, the operation

2 of analyzing the one or more site specific collected measures sets further

3 comprising:

4   code for comparing an initial measure selected from the one or more site

5   specific collected measures sets to a sibling measure selected from the one or

6   more other site specific collected measures sets, the initial measure and the sibling

7   measure both relating to the same type of patient information.

1   48.   (original): A storage medium according to Claim 46, the operation

2   of analyzing the one or more site specific collected measures sets further

3   comprising:

4   code for determining an initial derived measure using at least one measure

5   selected from the one or more site specific collected measures sets;

6   code for determining a sibling derived measure using at least one measure

7   selected from the one or more other site specific collected measures sets, the

8   initial derived measure and the sibling derived measure both relating to the same

9   type of derived patient information; and

10   code for comparing the initial derived measure to the sibling derived

11   measure.

1   49.   (original): A storage medium according to Claim 46, the operation

2   of analyzing the one or more site specific collected measures sets further

3   comprising:

4   code for comparing an initial measure selected from the one or more site

5   specific collected measures sets to a peer measure selected from the one or more

6   other site specific collected measures sets, the initial measure relating to a

7   different type of patient information than the peer measure.

1   50.   (original): A storage medium according to Claim 46, the operation

2   of analyzing the one or more site specific collected measures sets further

3   comprising:

4   code for determining a peer derived measure using at least one measure

5   selected from the one or more other site specific collected measures sets; and

6   code for comparing an initial measure selected from the one or more site

7   specific collected measures sets to the peer derived measure, the initial measure

8   relating to a different type of patient information than the derived patient

9   information to which the peer derived measure relates.

1   51.   (original): A storage medium according to Claim 46, the operation

2   of analyzing the one or more site specific collected measures sets further

3   comprising:

4   code for determining an initial derived measure using at least one measure

5   selected from the one or more site specific collected measures sets; and

6   code for comparing the initial derived measure to a peer measure selected

7   from the one or more other site specific collected measures sets, the initial derived

8   measure relating to a different type of derived patient information than the patient

9   information to which the peer measure relates.

1   52.   (original): A storage medium according to Claim 46, the operation

2   of analyzing the one or more site specific collected measures sets further

3   comprising:

4   code for determining an initial derived measure using at least one measure

5   selected from the one or more site specific collected measures sets;

6   code for determining a peer derived measure using at least one measure

7   selected from the one or more other site specific collected measures sets; and

8   code for comparing the initial derived measure to the peer derived

9   measure, the initial derived measure relating to a different type of derived patient

10 information than the derived patient information to which the peer derived

11 measure relates.

1   53.   (original): An storage medium according to Claim 44, further

2   comprising:

3   code for retrieving a reference baseline comprising recorded measures

4   which each relate to patient information recorded during an initial time period and

5   comprise either medical device measures or derived measures calculable

6   therefrom; and

7   code for obtaining at least one of the at least one recorded measure and the

8   at least one other recorded measure from the retrieved reference baseline.

1   54.   (original): A storage medium according to Claim 44, further

2   comprising:

3   code for providing tiered feedback comprising:

4   at a first level of feedback, communicating an interpretation of the

5   patient status indicator to the individual patient;

6   at a second level of feedback, communicating a notification of

7   potential medical concern based on the patient status indicator to the individual

8   patient;

9   at a third level of feedback, communicating a notification of

10   potential medical concern based on the patient status indicator to medical

11   personnel in local proximity to the individual patient; and

12   at a fourth level of feedback, communicating a set of

13   reprogramming instructions based on the patient status indicator to the medical

14   device.

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